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Food and nutrition programs for Aboriginal and Torres Strait Islander Australians: what works to keep people healthy and strong?

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Executive summary

More effective action is urgently required in order to reduce the unacceptable health inequalities experienced by Aboriginal and Torres Strait Islander peoples. Food insecurity and nutrition-related chronic conditions are responsible for a large proportion of the ill-health experienced by Australia's First Peoples who, before colonisation, enjoyed physical, social and cultural wellbeing for tens of thousands of years. Food and nutrition programs, therefore, play an important role in the holistic approach to improving health outcomes for Aboriginal and Torres Strait Islander peoples.

The National Aboriginal and Torres Strait Islander Health Plan takes a "whole-of-life" approach to improving health outcomes. Priority areas include maternal health and parenting; childhood health and development; adolescent and youth health; healthy adults and healthy ageing. This Policy Issues Brief provides a synthesis of the evidence for food and nutrition programs at each of these life stages. It answers questions such as, what kind of food and nutrition programs are most effective for Aboriginal and Torres Strait Islander peoples? And, how should these food and nutrition programs be developed and implemented?

Nutrition research has been criticised for focusing too much on quantifying dietary risks and deficits, without offering clear solutions. Increasingly, Aboriginal organisations are calling for strength-based approaches, which utilise community assets to promote health and wellbeing. Evidence-based decision-making must consider not only *what* should be done, but also *how* food and nutrition policies and programs can be developed to support the existing strengths of Aboriginal and Torres Strait Islander communities.

The evidence suggests that the most important factor determining the success of Aboriginal and Torres Strait Islander food and nutrition programs is community involvement in (and, ideally, control of) program development and implementation. Working in partnership with Aboriginal or Torres Strait Islander health professionals and training respected community members to deliver nutrition messages are examples of how local strengths and capacities can be developed. Incorporation of Aboriginal and Torres Strait Islander knowledge and culture into program activities is another key feature of strength-based practice which can be applied to food and nutrition programs.

Key Recommendations

1. Consistent incorporation of nutrition and breastfeeding advice into holistic maternal and child health care services.

2. Creation of dedicated positions for Aboriginal or Torres Strait Islander people to be trained and supported to work with their local communities to improve food security and nutrition.

3. Development of strategies which increase access to nutritious food, such as meal provision or food subsidy programs, should be considered for families experiencing food insecurity.

4. Adoption of settings-based interventions (e.g. in schools, early childhood services and sports clubs) which combine culturally-appropriate nutrition education with provision of a healthy food environment.

1. Introduction

This year marked the ten-year anniversary of the *Close the Gap* campaign for Aboriginal and Torres Strait Islander health equality. The goal of this campaign is to close the life expectancy gap between Aboriginal and Torres Strait Islander peoples and other Australians; a gap which is currently estimated to be 10 years (ABS 2014). The campaign, which is led by Aboriginal and mainstream peak health and social justice organisations, pursues a human rights-based approach to achieving health equality within a generation (Aboriginal and Torres Strait Islander Social Justice Commissioner 2005).

Approximately 80% of the gap in mortality between Aboriginal and Torres Strait Islander people and non-Indigenous Australians is due to preventable chronic conditions such as cardiovascular disease, type 2 diabetes, cancers and kidney failure (AHMAC 2014). Diet and nutrition as part of holistic wellbeing have an important role to play in preventing these conditions. For example, obesity is responsible for two-thirds of the burden of disease due to diabetes and one-third of the cardiovascular disease burden in the Aboriginal and Torres Strait Islander population (Vos et al. 2003). Obesity and other dietary factors are now the leading contributors to burden of disease in Australia (Institute of Health Metrics and Evaluation 2013). Thus improving nutrition should be an essential component of preventing chronic disease in the Aboriginal and Torres Strait Islander population.

This issues brief will present a synthesis of the evidence about Aboriginal and Torres Strait Islander food and nutrition, with the aim of providing evidence-based recommendations about:

- ***"what works"*** in relation to food and nutrition programs for Aboriginal and Torres Strait Islander communities
- ***"how to"*** develop and implement Aboriginal and Torres Strait Islander food and nutrition programs in an effective and appropriate manner to maximise the likelihood of success.

Understanding the issue

Nutrition is a key determinant of good health throughout life. It is essential to healthy foetal development, child growth and protection of health (NHMRC 2013). In addition, food provides important social and cultural functions, and access to adequate food is considered a basic human right (UN 1966).

Poor nutrition is rapidly becoming the most important factor contributing to adverse health outcomes in Australia. Dietary risks and overweight/obesity are now the leading causes of illness and death for all Australians, respectively accounting for 11% and 9% of the total disease burden (AIHW 2014). The total burden of disease attributable to dietary factors has not yet been calculated for Aboriginal and Torres Strait Islander Australians; however, it has been suggested that diet contributes to almost one-quarter of the disease burden experienced by Australia's First Peoples (Lee et al. 2013).

Before colonisation, a hunter-gatherer lifestyle sustained the good health of Aboriginal and Torres Strait Islander peoples for tens of thousands of years (Fredericks 2013). This diet was made up of unprocessed plant foods and undomesticated animals, and had a nutrient profile consistent with current dietary recommendations (O'Dea 2005). It is believed that this diet, together with high levels of physical activity and social wellbeing, protected Aboriginal and Torres Strait Islander peoples from the obesity and chronic diseases which are common today.

With colonisation came massacre, infectious disease and destruction of the traditional food habits and hunter-gatherer way of life. Aboriginal and Torres Strait Islander peoples were forcibly removed from ancestral lands, and made to live on reserves and missions, where nutritious diets were replaced with rations of flour, sugar, tea and fatty meat (Shannon 2002). Colonisation and the disruption of traditional societies and imposition of Western dietary patterns underpin the high prevalence of diet-related disease that many Aboriginal and Torres Strait Islander people experience today (Gracey 2002).

Despite this history, Australia's First Peoples are strong and resilient and are the world's longest-surviving culture (Rasmussen et al. 2011). Aboriginal and Torres Strait Islander peoples continue cultural practices, contributing to Australia's rich diversity, from which all can citizens benefit.

Understanding the evidence

The current access issues to health and nutrition experienced by Aboriginal and Torres Strait Islander peoples must be understood in the context of Australia's colonial history and the ongoing issues of racism and socioeconomic inequality. Diet is more than a lifestyle choice; it is determined by the availability of and access to healthy food, and by having the infrastructure, knowledge and skills to prepare food appropriately (WHO 1996).

Food insecurity underlies much of the diet-related disease in Aboriginal and Torres Strait Islander communities. The most recent National Health Survey revealed that approximately

one-quarter (23%) of Aboriginal and Torres Strait Islander people had run out of food in the previous year, compared with less than one in 20 (3.7%) in the non-Aboriginal population (ABS 2015). This is partially explained by the fact that Aboriginal and Torres Strait Islander households have, on average, a weekly gross income which is $250 less than that of non-Indigenous households (AIHW 2015).

The availability of nutritious foods, particularly fruit and vegetables, is inadequate in many remote communities (COAG 2010). It is also well documented that the cost of basic healthy foods has been progressively rising in Australia, with prices significantly higher in rural and remote areas (Harrison et al. 2010; ABS 2015b). Low-income households are forced to spend 30-40% of their weekly income on food to meet nutritional requirements (Harrison et al. 2010; Lee et al. 2011; Barosh et al. 2014).

The limited availability and affordability of healthy food for many Aboriginal and Torres Strait Islander families is reflected in national nutrition survey data. Fewer than half meet the recommendations for daily fruit intake, and only around one in 20 consume the recommended five serves of vegetables each day (ABS 2014). Instead, it is estimated that 41% of daily energy intake is derived from energy-dense, "discretionary" foods (ABS 2015), which provide a cheaper source of calories (Brimblecombe & O'Dea 2009).

Food insecurity is associated with obesity and type 2 diabetes (Burns 2004; Seligman 2007). Results from the 2012-13 National Aboriginal and Torres Strait Islander Health Survey revealed that approximately 70% of adults had a high waist circumference. Furthermore, one in 10 adults had diabetes, a prevalence three times higher than that in the non-Indigenous population (ABS 2013). Aboriginal and Torres Strait Islander Australians develop diabetes 20 years earlier than other Australians (ABS 2014), which increases the likelihood of complications of the disease developing (Song & Hardisty 2009).

The need for a new approach

Indigenous health research has been criticised for the predominance of descriptive studies which do not improve health outcomes for the communities involved (Sanson-Fisher et al. 2006). Specifically, it has been suggested that nutrition research focuses too much on quantifying diet-related problems, without offering or evaluating clear solutions (Foley & Schubert 2012). While epidemiological research is necessary in order to inform policy makers about population health and the determinants of health inequalities, Brough et al. (2004) caution that focusing only on risks and deficits can reinforce negative stereotypes about Aboriginal and Torres Strait Islander peoples. Opportunities also exist to utilise community strengths in policy and program development (Bond 2009). A strength-based

approach reframes the focus of public health and health promotion from "what's wrong with people?" to "what keeps people healthy?" (Bengel et al. 2001).

Strength-based approaches are advocated by Aboriginal and Torres Strait Islander organisations (National Congress of Australia's First Peoples 2012) and research centres (Lowitja Institute 2016), as well as by previous evidence reviews (Osborne, Baum & Brown 2012). Such an approach underpins the current National Aboriginal and Torres Strait Islander health Plan (Department of Health and Ageing 2013). However, there is a limited evidence base for strength-based approaches to improving food and nutrition, and it is not clear how these approaches can be effectively implemented in Aboriginal and Torres Strait Islander communities (Foley & Schubert 2012).

While systematic reviews provide a rigorous method for appraising relevant research evidence, it has been suggested that they are not always appropriate in Aboriginal health research (McDonald et al. 2010). The restrictive inclusion criteria in conventional systematic reviews often mean that only a very limited number of papers are considered. This process usually privileges experimental study designs and excludes qualitative research. However, qualitative research also makes a valuable contribution to evidence and decision-making in Aboriginal and Torres Strait Islander health, as this form of evidence is more likely to convey Indigenous perspectives about health programs and community strengths (Foley & Schubert 2012). Including a broader range of study designs can help to identify interventions which are not only effective, but are also engaging and empowering for Aboriginal and Torres Strait Islander peoples. For this reason, both quantitative and qualitative evidence have been considered in the development of this issues brief.

2. The Policy Context

Aboriginal and Torres Strait Islander health equality has been a prominent policy issue for the past decade. The *Close the Gap* public awareness campaign, which began in 2006, brought the issue of the life expectancy gap to the nation's attention, and urged all levels of government to commit to ending the health disparities faced by Aboriginal and Torres Strait Islander Australians. In response to this campaign, in December 2007 the Council of Australian Governments (COAG) agreed to a new policy goal of *Closing the Gap in Indigenous Disadvantage*. The COAG commitments included the specific targets of "closing the life expectancy gap within a generation" and "halving the mortality gap for children under five within a decade" (COAG 2007, p.3).

In 2008, the *Close the Gap* campaign partners came together at the National Indigenous Health Equality Summit. They developed a detailed set of targets which they considered to be necessary for achieving COAG's health commitments. Among these was a food and nutrition target, which proposed that greater than 90% of Aboriginal and Torres Strait Islander families should be able to access a standard healthy food basket for less than 25% of their available income (Steering Committee for Indigenous Health Equality 2008). This Summit culminated in the signing of the *Close the Gap Statement of Intent,* in which both major political parties, many peak health organisations and the Aboriginal community-controlled sector all agreed to work together to achieve health equality by the year 2030 (Human Rights and Equal Opportunity Commission 2008).

Over the next few months, COAG developed a National Indigenous Reform Agenda, branded *Closing the Gap*, which committed Federal, State and Territory Governments to agreed objectives, outputs and performance indicators for improving outcomes for Aboriginal and Torres Strait Islander peoples. One of the agreed indicators for closing the life expectancy gap is the prevalence of overweight and obesity (COAG 2011). By 2009, eight Indigenous-specific National Partnership Agreements had been signed, and $4.6 billion was invested to improve health and its social determinants, such as housing, employment, education and early childhood development (COAG 2011). A National Strategy for Remote Indigenous Food Security was added to the COAG agenda in December 2009 (COAG 2009). While the progress of the National Indigenous Reform Agreement continues to be monitored, all of the *Closing the Gap* National Partnership Agreements have now expired.

The current policy framework for improving Aboriginal and Torres Strait Islander health and meeting the COAG health targets is the National Aboriginal and Torres Strait Islander Health Plan. Improving food access and nutrition was identified as key strategy within the 10-year health plan (Department of Health and Ageing 2013, p.29) which was developed following extensive community consultation. The Health Plan takes a "whole-of-life" approach, aiming to reduce risk factors and improve health outcomes across the life course. Priority areas include maternal health and parenting; childhood health and development; adolescent and youth health; healthy adults and healthy ageing (Department of Health and Ageing 2013). Nutrition has an important role to play at each of these life stages.

The recently-published implementation plan (Department of Health 2015) also prioritises nutrition, especially for infants, children and pregnant women; however, specific strategies are yet to be defined. Instead, the Commonwealth has committed to undertaking a "Nutrition Framework Gap Analysis" in order to identify actions to address various food and nutrition issues, including food security and maternal and child nutrition (Department of

Health 2015, p.12). Governments clearly recognise the importance of food and nutrition to the health of Australia's First Peoples in policy documents. Despite this, there was no mention of Aboriginal and Torres Strait Islander nutrition programs or funding in the recently announced 2016-17 Commonwealth Budget (Department of Health 2016). The recent *Redfern Statement* published by Aboriginal and Torres Strait Islander leaders reaffirmed the need for urgent government action in order to improve health and social justice for First Peoples.

There is an abundance of data describing the "problems" associated with poor nutrition; however, clear policy "solutions" are more difficult to articulate. Evidence-based information is required in order to determine not only *what* should be done, but also *how* food and nutrition policies and programs can be developed to support the existing strengths of Aboriginal and Torres Strait Islander communities. This will enable policymakers to implement food and nutrition initiatives which are both effective and appropriate to the context.

3. What works? Lessons from food and nutrition programs for Aboriginal and Torres Strait Islander peoples

This section provides an overview of previous reviews of interventions which aimed to improve nutritional status or diet-related health outcomes for Aboriginal and Torres Strait Islander peoples. The findings have been organised into the key life stages prioritised within the National Aboriginal and Torres Strait Islander Health Plan (Department of Health 2013 & 2015). As noted above, these are maternal health and parenting; childhood health and development; adolescent and youth health; healthy adults and healthy ageing. For each of these life stages, quantitative and qualitative literature has been reviewed in order to answer the following questions:

- What kind of food and nutrition programs are most effective for Aboriginal and Torres Strait Islander peoples?
- How should food and nutrition programs for Aboriginal and Torres Strait Islander peoples be developed and implemented?

Maternal Health and Parenting

Two reviews have been undertaken which specifically examined Aboriginal and Torres Strait Islander maternal and child health interventions (Herceg 2006; Jongen et al. 2014). The first of these (Herceg 2006) was commissioned by the Office of Aboriginal and Torres Strait Islander Health in order to inform the development of a maternal and child health policy. This review identified numerous examples of successful community-based mother and baby programs published between 1993 and 2004. While these programs varied in scope, several demonstrated improvements in infant birthweights (e.g. d'Espaignet et al. 2003; Carter et al. 2004), and several reported success in promoting breastfeeding (Engeler 1998). The review concluded that flexible, community-based and/or community-controlled pregnancy and postnatal care services which respect Aboriginal and Torres Strait Islander people, families and culture were more likely to improve health outcomes. Having an appropriately-trained workforce which values Aboriginal and Torres Strait Islander staff was also considered a key element of successful programs (Herceg 2006).

A more recent systematic review (Jongen et al. 2014) provided updated information about maternal and child health programs in Aboriginal and Torres Strait Islander primary health care settings. The review further highlighted the promise of community-based and controlled antenatal and postnatal care programs for Aboriginal and Torres Strait Islander families. The most common program component identified in more recent literature was health promotion/education and advice/support, with nutrition and breastfeeding among the most common health promotion topics. While improvements in birth weights, breastfeeding rates and nutritional status were reported in some evaluations of government-funded maternal and child health programs (e.g. OATSIH 2005; Murphey & Best 2012), the reviewers advised that it was not possible to prove any "cause and effect" relationships, due to the variable quality of program documentation and evaluation methods (Jongen et al. 2014).

The *Strong Women, Strong Babies, Strong Culture* program stands out as the exemplar maternal and child nutrition initiative identified in both reviews. This community-initiated program has been implemented in multiple communities in the Northern Territory and remote Western Australia. The program used a peer-education model, in which senior women in the community provided nutrition assessment, education and advice to younger pregnant women, along with cultural activities and health promotion messages about tobacco, alcohol and antenatal care. In the Northern Territory, the program produced significant improvements in mean birthweights (Mackerras 2001; d'Espaignet et al. 2003), while in Western Australia, the introduction of growth assessment and infant feeding advice

resulted in improved infant growth after 6 months of age (Smith et al. 2000). It has been noted that the program has been more successful in some communities than others, which further highlights the importance of documenting how program components are implemented (Herceg 2006).

Childhood health and development

Interventions to improve child nutrition and growth were considered in the review by Herceg (2006), as well as in a systematic review specifically looking at interventions to prevent growth faltering among Aboriginal and Torres Strait Islander children (Macdonald et al. 2008). Both reviews provided evidence, based on a small number of studies in remote communities, that community-based nutrition programs, which combine nutrition education with other strategies such as growth monitoring and food provision, can improve growth and prevent hospital admissions. Macdonald et al. (2008) emphasised the importance of involving carers, health workers and local community members in the development of nutrition programs, and of ensuring that these interventions are integrated into primary health care systems and address the underlying causes of growth problems.

Food insecurity is one potential cause of child nutrition and growth problems. To address this, food supplementation was a component of some child nutrition programs reported in the literature (e.g. Coyne 1980; Warchivker 2003). Systematic reviews of supplementary feeding programs have demonstrated that the majority of research has been undertaken in low and middle-income countries (MacDonald et al. 2006; Kristjansson et al. 2015). A recent Cochrane review concluded that supplemental feeding programs can improve growth and psychomotor development, and that programs were more effective when supplementary food was provided at day care centres rather than at home (Kristjansson et al. 2015). The reviewers noted that the only effective study from a high-income country involved Aboriginal children who received hot meals and nutritious snacks when attending pre-school (Coyne 1980). Macdonald et al. (2006; 2008) cautioned that feeding programs should only be implemented when food insecurity is a major issue and when the local community supports such programs.

Food subsidy programs are another strategy which has been used to address food security for disadvantaged families in the United States (Black et al. 2012). Reviews of Aboriginal and Torres Strait Islander nutrition programs have highlighted successful subsidy programs for Aboriginal families experiencing food insecurity (Browne et al. 2009; Murray et al. 2014; Gwynn et al. 2015). The *Bulgarr Fruit and Vegetable Program* provided a weekly box of subsidised fruit and vegetables to families whose children were attending any one of three

local Aboriginal Medical Services for health assessments. Families made a co-payment of $5 for the fruit and vegetable box, which was worth $40-$60 depending on the number of children. After 12 months, the subsidy program improved the nutritional status and short-term health outcomes of participating children (Black et al. 2013a; 2013b).

Overweight and obesity is another issue which disproportionately affects Aboriginal and Torres Strait Islander children (ABS 2013a). One systematic review has attempted to examine the effectiveness of interventions to prevent childhood obesity among Indigenous children; however, no studies based in Aboriginal or Torres Strait Islander communities were identified in the literature (Laws et al. 2014). The only two Indigenous health programs included in the review were both from North America, and involved home visits. Evaluation of a 16-week home visiting parenting support program delivered by an Indigenous peer-educator demonstrated improvements in feeding practices, energy intake and promising results in relation to preventing obesity (Harvey-Berino 2003). It has also been suggested that comprehensive whole-of-community nutrition programs (see "Healthy Adults" section below) may positively impact childhood obesity rates (Closing the Gap Clearinghouse 2012)

Adolescent and youth health

The evidence regarding effective food and nutrition programs for Indigenous young people is very limited. A recent systematic review explored this topic; however, no Australian studies were identified in the peer-reviewed literature (Antonio et al. 2015). The six interventions reviewed were all undertaken with American Indian and Canadian Aboriginal populations, and community participation was a feature of all programs. Most studies in this review evaluated lifestyle education programs, delivered in school or community settings. The authors noted: "interventions with the curricula based on the Indigenous culture tended to report favourable outcomes for diet, nutrition and attitudes or beliefs of healthy lifestyle behaviours" (Antonio et al. 2015, p. 157). Combining health education with environmental modifications, such as removing soft drinks from high school vending machines, was also considered important for facilitating behaviour change and reducing the risk of type 2 diabetes (see, for example, Ritenbaugh et al. 2003).

Two reviews have been undertaken which specifically consider environmental interventions to improve Aboriginal and Torres Strait Islander health and nutrition (Black 2007; Johnston et al. 2013). Black (2007) provided further examples of successful school-based programs in American Indian and Canadian Aboriginal communities, which combined culturally-relevant nutrition education curriculum with changes in school food services. Furthermore, an

evaluation of Aboriginal nutrition projects in Western Australia concluded that provision of healthy school meals at low or no cost together with classroom nutrition education delivered by a respected Aboriginal community member were the most effective strategies (Miller et al. 2004).

The review by Johnston et al. (2013) highlighted the potential of school canteens, community stores, sporting clubs and festivals as settings for health promotion targeting the food environment. The *Hungry For Victory* youth nutrition program at the Rumbalara Football Netball Club in regional Victoria combined nutrition workshops and mentoring with provision of fruit and match day breakfasts. The nutritional quality of food sold at the sports club canteen also improved (Reilly et al. 2011). While the program was successful in improving the food environment and in engaging Aboriginal teenagers in nutrition promotion activities, no individual-level evaluation data were collected.

Healthy Adults

Reviews of Aboriginal and Torres Strait Islander food and nutrition programs have consistently observed that there is a paucity of rigorously-evaluated interventions (Butlin 1998; NSW Centre for Overweight and Obesity 2005; Clifford et al. 2011; Closing the Gap Clearinghouse 2012; Gwynn et al. 2015). Most reviews provided examples of effective "whole-of-community" healthy lifestyle programs undertaken in remote communities (e.g. Lee 1993; Rowley et al. 2000). These comprehensive programs combined nutrition education with provision and promotion of healthier options in community food stores. A key feature of all of the community-based nutrition projects which have produced favourable impacts on dietary intake, weight and biomarkers is that they were initiated and managed by the local Aboriginal or Torres Strait Islander community (Closing the Gap Clearinghouse 2012).

The *Looma Healthy Lifestyle Project* in remote Western Australia is a particularly successful program, distinguished by both its effectiveness and its longevity. The program components included education about nutrition and diabetes, physical activity sessions, cooking classes, store tours and policies to improve the food supplied in the store (Rowley 2000). Community members initiated and designed the project, and local people were employed to deliver program activities and to manage the community store. Aboriginal health workers, a diabetes educator and a sport and recreation officer were also employed. The program resulted in sustainable change in dietary intake, as well as long-term improvements in blood glucose levels and other heart disease risk factors (Rowley 2000; 2001). It has also been

reported that the prevalence of diabetes and obesity may be stabilising in Looma (Closing the Gap Clearinghouse 2012). This success has been attributed to the high level of community support and commitment to the program and to the policies implemented to improve the food supply.

The review by Johnston et al. (2013) included an evaluation of the impact of income management policies implemented as part of the Northern Territory Emergency Response. This intervention involved the quarantining of 50% of Aboriginal peoples' social security payments through a cashless *Basics Card* in attempt to increase spending on food and groceries and reduce spending on alcohol, tobacco, illicit drugs and gambling. An analysis of remote store sales data found that income management provided no beneficial impact in relation to purchasing of tobacco, soft drink or fruit and vegetables (Brimblecombe et al. 2010). This finding is significant given that an expansion of the cashless debit card trial was announced in the 2016-17 Federal budget (Department of Social Services 2016).

Two reviews have provided examples of effective food and nutrition programs undertaken in urban communities (Browne et al. 2009; Schrembri et al. 2016). A recently published systematic review investigated the effectiveness of nutrition education in improving nutrition-related health outcomes in Aboriginal and Torres Strait Islander people. Three studies based in urban settings combined group nutrition & cooking workshops with physical activity interventions, including the provision of pedometers. Evaluation of these programs revealed small improvements in outcomes such as weight, waist circumference and HbA1c (Harris and Curtis 2005; Longstreet et al. 2008; Canuto et al. 2012). Overall, the reviewers concluded that nutrition programs which involved the community in their development, as well as those including group education sessions, cooking skills workshops and store interventions, were most effective (Schrembri et al. 2016). In addition, the review by Browne et al. (2009) recommended combining nutrition education and skill-development interventions with strategies to increase the supply of and access to nutritious food. Transport assistance, improved kitchen facilities, community/school gardens, organisational nutrition policies and food subsidy programs were proposed as promising approaches in urban areas (Browne et al. 2009).

Healthy Ageing

Older Aboriginal and Torres Strait Islander people play key roles in their families and communities, including leadership, maintaining cultural knowledge and educating and supporting younger people (Warburton & Chambers 2007). Many of the reviews cited in this paper highlighted the roles which community Elders play in directing community-based

nutrition programs (Black 2007; Closing the Gap Clearinghouse 2012; Schrembri et al. 2016). However, only a small fraction of the literature focuses on nutrition programs specifically for older Aboriginal and Torres Strait Islander people. Schouten et al. (2013) undertook a systematic review of programs which were effective in improving nutrition in older Indigenous Australians. They were unable to identify any intervention studies, but suggested that incorporating nutrition screening into Home and Community Care (HACC) services and ensuring the nutritional quality of community meal programs presented opportunities for preventive health care (Schouten et al. 2013). Fredericks (2013) adds that improving nutrition must be balanced with addressing the other needs of older Aboriginal and Torres Strait Islander people, including connection to family and culture.

Although not specifically targeting older people, the reviews discussed in the "Healthy Adults" section (above) provided examples of food and nutrition programs which may be relevant to this age group. For example, the average age of participants in the *Looma Healthy Lifestyle Program* was 49 years, and the authors observed high response rates from older people in the community (Rowley et al. 2000). Similarly, the mean age reported in the studies reviewed by Schrembri (2016) was 40-51 years, with one program including participants aged up to 69 years (Longstreet et al. 2008).

One review identified some examples from the grey literature of initiatives specifically designed for older Aboriginal and Torres Strait Islander people (Browne et al. 2009). These usually focused on self-management of chronic conditions, and included an Elders' health camp and linking diabetes-related health promotion to a weekly Elders' lunch (Department of Rural Health 2001). *Aunty Jean's Good Health Team* is a health promotion and self-management program that has been operating in New South Wales since 2004. The program was designed by local Elders, and involves weekly group sessions which incorporate health checks, an exercise session, a healthy lunch and information sessions (including nutrition and cooking) delivered in a supportive, culturally safe environment. A participatory evaluation reported improvements in participants' self-management, exercise capacity and self-assessed health, physical function and quality of life (Curtis et al. 2004).

4. How should programs be developed and implemented?

The previous section provides examples of promising approaches to improving Aboriginal and Torres Strait Islander nutrition across the lifespan. While a number of systematic reviews have now been undertaken, the included studies predominantly provided low levels of evidence (Level III or IV), based on the NHMRC (2009) classification system, and evaluation designs were often moderate or weak quality (Clifford et al. 2011; Jongen et al. 2014; Schrembri et al. 2016). However, experimental study designs are often not

appropriate for the Aboriginal and Torres Strait Islander context (Sanson-Fisher et al. 2006), and evaluating the health impact and outcomes must be balanced with collecting qualitative information about the factors which enable successful program implementation (Mikhailovich et al. 2007) and identifying strength-based approaches to improving food and nutrition.

Reviews of Aboriginal and Torres Strait Islander nutrition programs identified a number of qualitative factors that were common to successful programs. The most important of these was community involvement in (and ideally control of) the development and implementation of the intervention, a requirement of ethical practice which cannot be overemphasised (NHMRC 2003). Working in partnership with the Aboriginal and Torres Strait Islander community enables the identification of local strengths and capacities, which can be supported and developed to initiate appropriate action (Foley & Schubert 2013).

Many of the effective nutrition programs described in the literature trained local Aboriginal or Torres Strait Islander people to deliver health promotion messages. Examples included the respected *Strong Women Workers* who provided cultural knowledge and nutrition education to pregnant women (Lowell et al. 2015); the Aboriginal nutrition workers who delivered school-based programs in Western Australia (Miller et al. 2004); the peer mentors involved in the *Hungry for Victory* program (Reilly et al. 2011); the community members who were trained to be diabetes workers in the *Looma Healthy Lifestyle* program (Rowley et al. 2000) and the Elders who designed the *Aunty Jean's Good Health Team* self-management program. These are some examples of how community assets have been utilised to develop empowering responses to food and nutrition issues.

Other common features and strengths of successful programs included:

- Programs based at Aboriginal Community Controlled Organisations
- Integration with existing primary health care systems and services
- Addressing physical access issues through provision of transport or home-visiting
- A welcoming, social and culturally safe environment
- Incorporation of Aboriginal and Torres Strait Islander culture into program activities
- A focus on effective communication and provision of feedback to participants
- Multifaceted approaches which address both individual knowledge and skills, as well as access to healthy food.
- Long-term partnerships between practitioners, researchers and the local Aboriginal or Torres Strait Islander community.
- A dedicated and appropriately trained workforce to deliver nutrition programs as part of holistic, comprehensive primary health care.

5. Recommendations for policy and practice

More effective action to improve food and nutrition is required to reduce the health disadvantages experienced by Aboriginal and Torres Strait Islander peoples. The previous sections describe both the "strength of evidence" for different types of food and nutrition intervention, and the "evidence of strength" in terms of how programs can best be designed and implemented. In order to improve nutritional outcomes, evidence-based nutrition interventions and program evaluation need to be embedded into practice over the long term as part of a holistic approach to primary health care. Based on the evidence reviewed, the following actions are recommended. Community support and participation is a pre-requisite for any new program.

1. Consistent incorporation of nutrition and breastfeeding education and advice into holistic maternal and child health care services. These services should be available and accessible for all families and should be developed and delivered using local Aboriginal knowledge.

2. Creation of dedicated positions for Aboriginal or Torres Strait Islander people of various ages (e.g. young people, mothers/fathers, adults, Elders) to be trained and appropriately supported to work with their local communities to improve food security and nutrition.

3. Development of strategies which increase access to nutritious food, such as meal provision or food subsidy programs should be considered for families or communities experiencing food insecurity. Reducing the physical and financial barriers to accessing healthy foods in remote communities is necessary.

4. Adoption of settings-based interventions, which combine culturally-appropriate nutrition education with provision of a healthy food environment. Examples of settings for such interventions include early childhood services, schools, sports clubs and Aboriginal and Torres Strait Islander community organisations.

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